



DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XB895]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Kitty Hawk Wind Marine Site Characterization Surveys, North Carolina and Virginia

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an IHA to Kitty Hawk Wind, LLC (Kitty Hawk Wind), to incidentally harass marine mammals during marine site characterization surveys off North Carolina and Virginia in and around the area of Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf Lease Area (OCS)-A 0508.

DATES: The IHA is effective from August 1, 2022 through July 31, 2023.

FOR FURTHER INFORMATION CONTACT: Jaclyn Daly, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the IHA and supporting documents may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary

of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On July 19, 2021, NMFS received a request from Kitty Hawk Wind, a subsidiary of Avangrid Renewables (Avangrid), for an IHA to take marine mammals incidental to conducting marine site characterization surveys off of the Atlantic Coast. Kitty Hawk Wind’s overall lease area (OCS-A 0508) is located approximately 44 kilometers (km) offshore of Corolla, North Carolina, in Federal waters. The proposed survey activities will occur within the wind development area (WDA) and along the electric cable corridor (ECC) to landfall locations in North Carolina and Virginia. We received a final, revised version of Kitty Hawk Wind’s application on January 12, 2022 and deemed it adequate

and complete on January 13, 2022. Kitty Hawk Wind's request is for take of 17 species of marine mammals, by Level B harassment only. Neither Kitty Hawk Wind nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued an IHA to Avangrid, prior to it establishing Kitty Hawk Wind, for similar work in the same geographic area on June 3, 2019 (84 FR 31032) with effectiveness dates from June 1, 2019 through May 31, 2020 and to Kitty Hawk Wind specifically on July 21, 2021 with effective dates from July 23, 2021 through October 31, 2021 (86 FR 43212; August 6, 2021). Avangrid/Kitty Hawk Wind complied with all the requirements (*e.g.*, mitigation, monitoring, and reporting) of the previous IHAs and information regarding their monitoring results may be found in the **Estimated Take** section. Avangrid and Kitty Hawk Wind's final marine mammal monitoring reports submitted pursuant to those IHAs can be found at

<https://www.fisheries.noaa.gov/action/incidental-take-authorization-avangrid-renewables-llc-marine-site-characterization-surveys>.

Description of Proposed Activity

Kitty Hawk Wind is planning to conduct marine site characterization surveys with the use of high-resolution geophysical (HRG) survey equipment in the Atlantic Ocean off of North Carolina and Virginia (we note only limited survey work will extend into waters off Virginia). Kitty Hawk will also conduct surveys in the inshore sounds of North Carolina, including Bogue, Pamlico, Albemarle, and Currituck Sounds (as part of the ECC); however, those surveys will use equipment operating at frequencies above 180 kilohertz (kHz) (outside marine mammal hearing range) and therefore will not result in harassment to marine mammals. For this reason, survey work in inshore sounds is not further discussed in this notice. In addition to Kitty Hawk South surveys, there will be a small amount of residual survey effort from the Kitty Hawk North WDA and ECC (the

area surveyed under the previous IHAs) included in this survey effort due to inability to complete previous surveys as a result of unsuitable weather.

Dates and Duration

Kitty Hawk Wind plans to commence the surveys in August 2022 and continue for 1 year. Based on 24-hour operations, the HRG survey activities (excluding those in inshore sounds) are expected to require 273 vessel days which represents the sum of the total number of days each vessel operates (not calendar days). Three vessels using equipment that has the potential to result in harassment to marine mammals would operate during the survey.

A detailed description of the planned surveys by Kitty Hawk Wind are provided in the **Federal Register** notice of the proposed IHA (87 FR 7139; February 8, 2022). Since that time, no changes have been made to the project activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specified activities. Here, we provide brief information on the effort and sound sources Kitty Hawk would use during the surveys (Table 1 and Table 2). We note that all decibel (dB) levels included in this notice are referenced to 1 microPascal (1 μ Pa). The root mean square decibel level (dB_{rms}) represents the square root of the average of the pressure of the sound signal over a given duration. The peak dB level (dB_{peak}) represents the range in pressure between zero and the greatest pressure of the signal. Operating frequencies are presented in kilohertz (kHz).

Table 1. Survey Segment Details

Vessel	Location and Line kms*	Predominant HRG Source	Duration
Vessel A	WDA: 7,562 kms ECC: 590	Multi-channel Seismic (Sparker)	WDA: 42 days ECC: 4
Vessel A	ECC Alternative A: 3,107 kms	Single Channel Seismic (Boomer)	17 days
Vessel A	Expanded OECC: 5,843	Single Channel Seismic (Boomer)	33 days

Vessel B	WDA/ECC: 15,715 kms	Single Channel Seismic (Boomer)	80 days
Vessel C	ECC Base Case: 16,071 kms	Single Channel Seismic (Boomer)	96 days
Total			
3 vessels	48,888 km	-	273 days

*Does not include survey transect line distance in Bogue, Pamlico, Albemarle, and Currituck Sounds.

Table 2. Kitty Hawk Wind HRG Source Characteristics

HRG System	Representative HRG Survey Equipment	Operating Frequencies kilohertz (kHz)	Source Level dB _{peak}	Source Level dB _{rms}	Pulse Duration (ms)	Beam Width (degree)
Shallow penetration subbottom profiler	EdgeTech 512i	0.4 to 12	186 c/	180 c/	1.8 to 65.8	51 to 80
Medium penetration subbottom profiler a/	Applied Acoustics SBoom 750J (Triple Plate Boomer)	0.9-14	206 d/	198 d/	0.8	30 e/
Multi-channel Sparker (MCS) in flip/flop configuration b/	Applied Acoustics Dura-Spark 1000J	3.2	223 f/	213 f/	0.5 to 3 f/	180
Multi-channel Sparker (MCS) in flip/flop configuration	GeoMarine Geo-Source 800J	0.05 to 5	215	206	5.5	180
<p>a/ While three operational powers (500/750/1000J) were modeled for the Applied Acoustics S-Boom for comparison purposes, only the 750 joules (J) operational power is anticipated to be used.</p> <p>b/ Although the entire MCS array would be mobilized, the sparker sources would be activated in an alternating flip/flop sequence.</p> <p>c/ The source levels are based on data from Crocker and Frantantonio (2016) for the EdgeTech 512i for 75 percent power with a bandwidth of 0.5 to 8 kHz.</p> <p>d/ The source levels are based on data from Crocker and Frantantonio (2016) for the Applied Acoustics S-Boom for source setting of 750J.</p> <p>e/ The beamwidth was provided in email correspondence with Neil MacDonald of Modulus Technology Ltd.</p> <p>f/ The source levels are based on data from Crocker and Frantantonio (2016).</p>						

Mitigation, monitoring, and reporting measures contained within the IHA are described in detail later in this document (please see **Mitigation** and **Monitoring and Reporting**).

Comments and Responses

A notice of NMFS' proposal to issue an IHA to Kitty Hawk Wind was published in the **Federal Register** on February 8, 2022 (87 FR 7139). That proposed notice described, in detail, Kitty Hawk Wind's activities, the marine mammal species that may be affected by the activities, and the anticipated effects on marine mammals. This proposed notice was available for a 30-day public comment period. During this period, NMFS received a comment letter from Oceana. A summary of Oceana's comments and NMFS' responses are as follows:

Comment 1: Oceana opposes NMFS' renewal process and suggested NMFS should end its approach to renewing IHAs with a 15-day comment period, instead providing a full 30-day comment period for a renewal notice to ensure adequate public engagement.

Response: Several statements provided by Oceana suggest it believes erroneously that NMFS is proposing to issue a renewal IHA to Kitty Hawk Wind and allowed a 15-day public comment period. The public comment period for issuance of the proposed IHA to Kitty Hawk Wind was February 8, 2022 through March 10, 2022 which constituted 30 days and the action is issuance of a new IHA to Kitty Hawk, not a renewal IHA. While NMFS also solicited public comments on the potential for issuance of a renewal IHA, should Kitty Hawk Wind request one, that action would come later in time. Should Kitty Hawk request, and NMFS propose, to issue a renewal IHA, NMFS will provide an additional 15-day public comment period on that action for a total of a 45-day public comment period. Because any renewal (as explained in the Request for Public Comments section of the proposed IHA) is limited to another year of identical or nearly identical activities in the same location (as described in the Description of the Proposed Activity section of the proposed IHA) or the same activities that were not completed within the 1-year period of the initial IHA, reviewers have the information needed to

effectively comment on both the immediate proposed IHA and a possible 1-year renewal, should the IHA holder choose to request one.

While there are additional documents submitted with a renewal request, for a qualifying renewal these are limited to documentation that NMFS will make available and use to verify that the activities are identical to those in the initial IHA, are nearly identical such that the changes would have either no effect on impacts to marine mammals or decrease those impacts, or are a subset of activities already analyzed and authorized but not completed under the initial IHA. NMFS will also confirm, among other things, that the activities will occur in the same location; involve the same species and stocks; provide for continuation of the same mitigation, monitoring, and reporting requirements; and that no new information has been received that would alter the prior analysis. The renewal request must also contain a preliminary monitoring report, but that is to verify that effects from the activities do not indicate impacts of a scale or nature not previously analyzed. The additional 15-day public comment period provides the public an opportunity to review these few documents, provide any additional pertinent information, and comment on whether they think the criteria for a renewal have been met. NMFS also will provide direct notice of the proposed renewal to those who commented on the initial IHA, to provide an opportunity to submit any additional comments. Between the initial 30-day comment period on these same activities and the additional 15 days, the total comment period for a renewal is 45 days.

In addition to the IHA renewal process being consistent with all requirements under section 101(a)(5)(D), it is also consistent with Congress's intent for issuance of IHAs to the extent reflected in statements in the legislative history of the MMPA. Through the provision for renewals in the regulations, description of the process and express invitation to comment on specific potential renewals in the Request for Public Comments section of each proposed IHA, the description of the process on NMFS'

website, further elaboration on the process through responses to comments such as this, posting of substantive documents on the agency's website, and provision of 30 or 45 days for public review and comment on all proposed initial IHAs and renewals, respectively, NMFS has ensured that the public “is invited and encouraged to participate fully in the agency decision-making process.”

In prior responses to comments about IHA renewals (*e.g.*, 84 FR 52464, October 02, 2019; 85 FR 53342, August 28, 2020; 86 FR 33664, June 25, 2021; 87 FR 806, January 6, 2022), NMFS has explained how the renewal process, as implemented, is consistent with the statutory requirements contained in section 101(a)(5)(D) of the MMPA, provides additional efficiencies beyond the use of abbreviated notices, and, further, promotes NMFS' goals of improving conservation of marine mammals and increasing efficiency in the MMPA compliance process. Therefore, we intend to continue implementing the renewal process. For more information, NMFS has published a description of the renewal process on our website (available at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-harassment-authorization-renewals>).

Comment 2: Oceana notes that the IHA must rely upon the most recent and best available science for the North Atlantic right whale (NARW), including updated population estimates, recent habitat use patterns for the study area, and a revised discussion of acute and cumulative stress of whales in the region, and asserts that NMFS does not do so. Specifically, for population estimates, Oceana suggests the NARW Consortium's Annual Report Card (Report Card) is the best available science.

Response: NMFS has used the best available science regarding population abundance and trends, habitat use of the survey area, and a sufficiently comprehensive review of existing stressors on NARWs, including data related to the ongoing unusual

mortality event in issuing the IHA. NMFS also considers the best science available when considering renewals as well.

The **Federal Register** notice of proposed IHA (87 FR 7139, February 8, 2022) identifies that the NARW population is endangered, discusses habitat use of the survey area, identifies current stressors on the population (*e.g.*, entanglement in fishing gear and vessel strikes), and identifies potential impacts of the proposed survey, including effects of stress, on NARWs. The notice of proposed IHA cites the NMFS draft 2021 stock assessment report (SAR) as the best available science with respect to NARW population estimates ($n = 356\text{-}368$). The SARs are peer-reviewed by the Atlantic Scientific Review Group whereas the Report Card, available at <https://www.narwc.org/report-cards.html>, is published independently by Consortium members without peer review. Although the 2021 NARW Report Card is available and indicates the NARW population is slightly lower than indicated in the draft 2021 SAR, NMFS relies on the SAR. Recently (after publication of the notice of proposed IHA), NMFS has updated its species webpage to recognize the population estimate for NARWs is now below 350 animals (<https://www.fisheries.noaa.gov/species/north-atlantic-right-whale>). We anticipate that this information will be presented in the draft 2022 SAR. We note that this change in abundance estimate would not change the estimated take of NARWs or authorized take numbers, nor affect our ability to make the required findings under the MMPA for Kitty Hawk Wind's survey activities.

NMFS agrees with Oceana that both acute and chronic stressors are of concern for NARW conservation and recovery. We recognize that acute stress from acoustic exposure is one potential impact of these surveys, and that chronic stress can have fitness, reproductive, *etc.* impacts at the population-level scale. NMFS has carefully reviewed the best available scientific information in assessing impacts to marine mammals, and recognizes that the surveys have the potential to impact marine mammals through

behavioral effects, stress responses, and auditory masking. However, NMFS does not expect that the generally short-term, intermittent, and transitory marine site characterization survey activities in a NARW migratory habitat would create conditions of acute or chronic acoustic exposure leading to stress responses that would result in meaningful impacts to marine mammals. NMFS has also prescribed a robust suite of mitigation measures, such as time-area limitations and extended distance shutdowns for certain species that are expected to further reduce the duration and intensity of acoustic exposure, while limiting the potential severity of any possible behavioral disruption. The potential for chronic stress was evaluated in making the determinations presented in NMFS's negligible impact analyses.

Comment 3: Oceana asserted that NMFS should fully consider the discrete effects of each activity and the cumulative effects of the suite of approved, proposed, and potential activities on marine mammals, including NARWs, and ensure that the cumulative effects are not excessive before issuing or renewing an IHA.

Response: Neither the MMPA nor NMFS' codified implementing regulations call for consideration of other unrelated activities and their impacts on populations. The preamble for NMFS' implementing regulations (54 FR 40338; September 29, 1989) states in response to comments that the impacts from other past and ongoing anthropogenic activities are to be incorporated into the negligible impact analysis via their impacts on the baseline. Consistent with that direction, NMFS has factored into its negligible impact analysis the impacts of other past and ongoing anthropogenic activities via their impacts on the baseline, *e.g.*, as reflected in the density/distribution and status of the species, population size and growth rate, and other relevant stressors. Section 101(a)(5)(D) of the MMPA requires NMFS to modify, suspend, or revoke the IHA if it finds that the activity is having more than a negligible impact on the affected species or stocks of marine mammals. NMFS will closely monitor baseline conditions before and during the period

when the IHA is effective and will exercise this authority if appropriate. The 1989 final rule for the MMPA implementing regulations also addressed public comments regarding cumulative effects from future, unrelated activities. There NMFS stated that such effects are not considered in making findings under section 101(a)(5) concerning negligible impact. In this case, both this IHA, as well as other IHAs currently in effect or proposed within the specified geographic region, are appropriately considered unrelated activities relative to the others. The IHAs are unrelated in the sense that they are discrete actions under section 101(a)(5)(D), issued to discrete applicants.

Section 101(a)(5)(D) of the MMPA requires NMFS to make a determination that the take incidental to a “specified activity” will have a negligible impact on the affected species or stocks of marine mammals. NMFS' implementing regulations require applicants to include in their request a detailed description of the specified activity or class of activities that can be expected to result in incidental taking of marine mammals. 50 CFR 216.104(a)(1). Thus, the “specified activity” for which incidental take coverage is being sought under section 101(a)(5)(D) is generally defined and described by the applicant. Here, Kitty Hawk Wind was the applicant for the IHA, and we are responding to the specified activity as described in that application (and making the necessary findings on that basis). Through the response to public comments in the 1989 implementing regulations, we also indicated (1) that NMFS would consider cumulative effects that are reasonably foreseeable when preparing a NEPA analysis, and (2) that reasonably foreseeable cumulative effects would also be considered under section 7 of the ESA for ESA-listed species, as appropriate. Cumulative impacts regarding issuance of IHAs for site characterization survey activities such as those planned by Kitty Hawk Wind have been adequately addressed under NEPA in prior environmental analyses that support the basis for NMFS' determination that this action is appropriately categorically excluded from further NEPA analysis. NMFS independently evaluated the use of a

categorical exclusion for issuance of Kitty Hawk Wind's IHA, which included consideration of extraordinary circumstances.

Comment 4: Oceana indicated the IHA must include conditions for the survey activities that will first avoid impacts on NARWs and then minimize and mitigate effects. Oceana suggested that NMFS should permit Kitty Hawk Wind to utilize lower impact techniques or technology if those provide information about the site without adverse effects.

Response: Kitty Hawk Wind has indicated the equipment needed to conduct the survey is that contained within the IHA application and NMFS has prescribed measures to reduce impacts to the maximum extent practicable. NMFS has included measures in the IHA measures that will minimize impacts on NARWs, including a 500-m clearance and shutdown zone. The takes of NARWs authorized are included as a precaution in recognition of potential circumstances where whales are not detected in time to shut down; however, upon detection, equipment would be shut down, limiting exposure time and potentially avoiding harassment. NMFS finds the measures prescribed through the IHA result in the least practicable adverse impacts on marine mammals.

Comment 5: Oceana suggested that during low light conditions, the IHA should require complimenting protected species observer (PSO) efforts with additional monitoring technologies such as infrared (IR) technology, a 500-m separation distance between vessels and NARWs, and requiring sources to ramp up.

Response: NMFS agrees with Oceana. The proposed IHA made available for public comment and the issued IHA include a requirement that during reduced visibility conditions, including nighttime operations, PSOs must utilize enhanced detection technology, that all vessels maintain a 500-m separation distance from NARWs at all times, and where technically feasible (*e.g.*, equipment is not on a binary on/off switch), a ramp-up procedure will be used for HRG survey equipment capable of adjusting energy

levels at the start or restart of HRG survey activities. Kitty Hawk Wind has confirmed both the boomers and sparkers used during the survey have the capability to be ramped-up, thus, they will do so.

Comment 6: Oceana recommended that the IHA should limit all vessels of all sizes associated with the proposed survey activity to speeds less than 10 knots (kn; 18.5 kilometers (km)/hour) at all times with no exceptions.

Response: NMFS acknowledges that vessel strikes can result in injury, serious injury, or mortality and reducing the risk of vessel strikes to NARWs is a key priority. We have analyzed the potential for ship strike resulting from Kitty Hawk Wind's activity and have determined that based on the nature of the activity (*e.g.*, survey vessel speeds during operations are approximately 4 kn (4.6 miles per hour)) and the required mitigation measures specific to vessel strike avoidance included in the IHA, potential for vessel strike is so low as to be discountable. Specific to NARWs, these mitigation measures, all of which were included in the proposed IHA and are contained in the final IHA, include a requirement that: all vessel operators comply with 10 kn (18.5 km/hour) or less speed restrictions in any Seasonal Management Area (SMA; November 1 through April 30) or Dynamic Management Area (DMA) and check daily for information regarding the establishment of mandatory or voluntary vessel strike avoidance areas and information regarding NARW sighting locations; all vessel operators reduce vessel speed to 10 kn (18.5 km/hour) or less when any large whale, any mother/calf pairs, pods, or large assemblages of non-delphinid cetaceans are observed within 100 meters (m) of an underway vessel; all survey vessels maintain a separation distance of 500-m or greater from any ESA-listed whales or other unidentified large marine mammals visible at the surface while underway; vessels must steer a course away from any sighted ESA-listed whale at 10 kn or less until the 500-m minimum separation distance has been established; and, if an ESA-listed whale is sighted in a vessel's path, or within 500 m of an underway

vessel, the underway vessel must reduce speed and shift the engine to neutral. We have determined that the ship strike avoidance measures in the IHA are sufficient to ensure the least practicable adverse impact on NARWs. Furthermore, no documented vessel strikes of any marine mammal species, including NARWs, have occurred during any marine site characterization surveys, including transiting, for which NMFS has issued an IHA.

Comment 7: Oceana recommended that, to support oversight and enforcement, the IHA should require all vessels to be equipped with and using a Class A Automatic Identification System (AIS) device at all times while on the water.

Response: NMFS is generally supportive of the idea that vessels involved with survey activities be equipped with and using Class A Automatic Identification System (devices) at all times while on the water. Indeed, there is a precedent for NMFS requiring such a stipulation for geophysical surveys in the Atlantic Ocean (83 FR 63268, December 7, 2018); however, these activities carried the potential for much more significant impacts than the marine site characterization surveys to be carried out by Kitty Hawk Wind, with the potential for both Level A and Level B harassment take. Given the small isopleths and small numbers of take authorized by this IHA, NMFS does not agree that the benefits of requiring AIS on all vessels associated with the survey activities outweighs and warrants the cost and practicability issues associated with this requirement.

The large majority of HRG vessels used by Kitty Hawk Wind have AIS onboard. There are some instances in which small vessels (approximately 10 m (33 feet (ft) or smaller) are used in shallow water and these may or may not have an AIS installed. These small vessels would primarily work in the inshore sounds and very shallow coastal waters where the larger vessels cannot access. NMFS does not agree it is necessary to install AIS on these small vessels.

Comment 8: Oceana recommended the IHA must require all vessels associated with the project, at all phases of development, follow the vessel plan and rules regardless

of ownership, operator, contract and that developers are explicitly liable for behavior of all employees, contractors, subcontractors, consultants, and associated vessels and machinery.

Response: The conditions in the IHA are relevant to all vessels and personnel participating in Kitty Hawk Wind's survey activities for the time period that the IHA is effective.

Comment 8: Oceana asserts that the IHA should include a requirement for all phases of the site characterization to subscribe to the highest level of transparency, including frequent reporting to Federal agencies, requirements to report all visual and acoustic detections of NARWs and any dead, injured, or entangled marine mammals to NMFS or the Coast Guard as soon as possible and no later than the end of the PSO shift. They also recommend all reports and data be accessible on a publicly available website.

Response: NMFS agrees with the need for reporting and indeed, the MMPA calls for IHAs to incorporate reporting requirements. The proposed IHA and issued IHA include requirements for reporting that support Oceana's recommendations. Kitty Hawk Wind is required to submit a monitoring report to NMFS within 90 days after completion of survey activities that fully documents the methods and monitoring protocols, summarizes the data recorded during both visual and passive acoustic monitoring, estimates the number of marine mammals that may have been taken during survey activities, and describes, assesses and compares the effectiveness of monitoring and mitigation measures. PSO datasheets or raw sightings data must also be provided with the draft and final monitoring report. We note acoustic detections will not be reported as no passive acoustic monitoring is required in the IHA (see response to *Comment 10*).

Further, the IHA stipulates that if a NARW is observed at any time by any project vessels, during surveys or during vessel transit, Kitty Hawk Wind must immediately report sighting information to the NMFS NARW Sighting Advisory System and to the

U.S. Coast Guard, and that any discoveries of injured or dead marine mammals be reported by Kitty Hawk Wind to the Office of Protected Resources, NMFS, and to the Southeast Regional Stranding Coordinator as soon as feasible. All reports and associated data submitted to NMFS are included available for public inspection at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable>.

Comment 9: Oceana recommended the IHA include requirements to use effective reactive restrictions that are triggered by detection of protected species by visual, acoustic, or other means before or during site characterization activities. Specifically, they suggested requiring a 1,000 m clearance zone and shutdown zone for NARWs with immediate notification to NMFS if this measure is triggered. Oceana did not provide reasoning for this zone size.

NMFS Response: NMFS disagrees with this recommendation. The 500-m clearance and shutdown zones for NARWs exceeds the modeled distance to the largest 160-dB Level B harassment isopleth distance at highest power (445 m). Given that calculated Level B harassment isopleths are likely conservative, and NMFS considers impacts from HRG survey activities to be near de minimis, the 500-m clearance and shutdown zones is sufficiently protective to effect the least practicable adverse impact on NARWs. The issued IHA maintains the 500-m clearance and shutdown zone requirement, as contained within the proposed IHA. In addition, the IHA requires Kitty Hawk Wind to ramp-up sources prior to operating at full power when sources allow for such an action (sources with binary on/off switches cannot be ramped-up).

Comment 10: Oceana recommended Kitty Hawk Wind use passive acoustic monitoring (PAM) to aid in NARW detection and trigger mitigation measures such as shutdowns.

NMFS Response: There are several reasons why we do not agree that use of PAM is warranted for Kitty Hawk Wind's HRG surveys. While NMFS agrees that PAM can be an important tool for augmenting detection capabilities in certain circumstances, its utility in further reducing impact the proposed HRG survey activities is limited. Oceana's recommendation involves extremely costly and time consuming (*i.e.*, impracticable) monitoring and mitigation measures that are not warranted based on the best available science indicating extremely low densities of NARWs during the effective period of the IHA and the extremely small harassment zones which would likely not meaningfully enhance detection, and the practical limitations of identifying precise locations of whales to trigger mitigation at such close distances to the vessel. We explain below, in detail, why PAM is not warranted for this survey.

It is generally well-accepted that using towed passive acoustic sensors to detect baleen whales (including NARWs) is not typically effective because the noise from the vessel, the flow noise, and the cable noise are in the same frequency band and will mask the vast majority of baleen whale calls. Vessels produce low-frequency noise, primarily through propeller cavitation, with main energy in the 5-300 Hertz (Hz) frequency range. Source levels range from about 140 to 195 dB re 1 μ Pa (micropascal) at 1 m (NRC, 2003; Hildebrand, 2009), depending on factors such as ship type, load, and speed, and ship hull and propeller design. Studies of vessel noise show that it appears to increase background noise levels in the 71-224 Hz range by 10-13 dB (Hatch et al., 2012; McKenna *et al.*, 2012; Rolland *et al.*, 2012). PAM systems employ hydrophones towed in streamer cables approximately 500 m behind a vessel. Noise from water flow around the cables and from strumming of the cables themselves is also low-frequency and typically masks signals in the same range. Experienced PAM operators participating in a recent workshop (Thode *et al.*, 2017) emphasized that a PAM operation could easily report no acoustic encounters, depending on species present, simply because background noise levels rendered any

acoustic detection impossible. The same workshop report stated that a typical eight-element array towed 500 m behind a vessel could be expected to detect delphinids, sperm whales, and beaked whales at the required range, but not baleen whales, due to expected background noise levels (including seismic noise, vessel noise, and flow noise).

There are several additional reasons why we do not agree that use of PAM is warranted for Kitty Hawk Wind's survey activities. While NMFS agrees that PAM can be an important tool for augmenting detection capabilities in certain circumstances, its utility in further reducing impact during HRG survey activities is limited. First, for this activity, the area expected to be ensonified above the Level B harassment threshold is relatively small (a maximum of 445 m)—this reflects the fact that, to start with, the source level is comparatively low and the intensity of any resulting impacts would be lower level and, further, it means that inasmuch as PAM will only detect a portion of any animals exposed within a zone, the overall probability of PAM detecting an animal in the harassment zone, alone and without a corresponding visual detection, is low—together these factors support the limited value of PAM for use in reducing take with smaller zones. PAM is only capable of detecting animals that are actively vocalizing, while many marine mammal species vocalize infrequently or during certain activities, which means that only a subset of the animals within the range of the PAM would be detected (and potentially have reduced impacts). Additionally, localization and range detection can be challenging under certain scenarios. For example, odontocetes are fast moving and often travel in large or dispersed groups which makes localization difficult.

Given that the effects to marine mammals from the types of surveys authorized in this IHA are expected to be limited to low level behavioral harassment, even in the absence of mitigation, the limited additional benefit anticipated by adding this detection method (especially for NARWs), and the cost and impracticability of implementing a full-time PAM program, we have determined the current requirements for visual

monitoring are sufficient to ensure the least practicable adverse impact on the affected species or stocks and their habitat.

Changes from the Proposed IHA to Final IHA

In their application, Kitty Hawk Wind indicated they would start the proposed surveys in April 2022 with the goal of completing them prior to November 1, 2022. In the notice of proposed IHA, NMFS noted this survey schedule would reduce impacts to NARWs given their migratory patterns although we did not propose a mitigation measure that the surveys must be completed by November and the take estimates we calculated assuming year-round surveys. Since that time, Kitty Hawk has informed NMFS that due to unforeseen changes in the schedule, the surveys are now scheduled to start in August 2022 and surveys are likely to run through the winter. The schedule change does not impact take estimates for NARWs ($n = 2$) or for any other marine mammal nor does this change our findings given the impacts from these types of surveys are already minimal and the authorized take of NARWs is only 2.

Since publication of the notice of proposed IHA, NMFS has acknowledged that the population estimate of NARWs is now under 350 animals (<https://www.fisheries.noaa.gov/species/north-atlantic-right-whale>). However, as discussed in our response to Comment #2 above, NMFS has determined that this change in abundance estimate would not change the estimated take of NARWs or authorized take numbers, nor affect our ability to make the required findings under the MMPA for Kitty Hawk Wind's survey activities. The status and trends of the NARW population remain unchanged.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. NMFS fully considered all of this information, and we

refer the reader to these descriptions, incorporated here by reference, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about these species (e.g., physical and behavioral descriptions) may be found on NMFS's website (<https://www.fisheries.noaa.gov/find-species>).

Table 3 lists all species or stocks that may occur within the survey area and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2021). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no serious injury or mortality is anticipated or issued, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Atlantic and Gulf of Mexico SARs (e.g., Hayes *et al.*, 2019, 2020). All values presented in Table 3 are the most recent available at the time of publication and are available in the draft 2021 SARs (available online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports>).

Table 3. Species Likely Impacted by the Specified Activities

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance (CV, N _{min} , most recent abundance survey) ²	PBR	Annual M/SI ³
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenidae						
North Atlantic right whale	<i>Eubalaena glacialis</i>	Western North Atlantic	E/D; Y	368 (-; 356; 2020) ⁴	0.8	18.6
Family Balaenopteridae (rorquals)						
Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine	-/-; Y	1,393 (0; 1,375; 2016)	22	58
Fin whale	<i>Balaenoptera physalus</i>	Western North Atlantic	E/D; Y	6,802 (0.24; 5,573; 2016)	11	2.35
Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia	E/D; Y	6,292 (1.02; 3,098; 2016)	6.2	1.2
Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian East Coast	-/-; N	21,968 (0.31; 17,002; 2016)	170	10.6
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Ziphiidae						
Cuvier’s beaked Whale	<i>Ziphius cavirostris</i>	Western North Atlantic	-/-; N	5,744 (0.36, 4,282, 2016)	43	0.2
Blainville’s beaked Whale	<i>Mesoplodon densirostris</i>	Western North Atlantic	-/-; N	10,107 (0.27, 8,085, 2016)	81	0
True’s beaked whale	<i>Mesoplodon mirus</i>	Western North Atlantic	-/-; N		81	0
Gervais’ beaked whale	<i>Mesoplodon europaeus</i>	Western North Atlantic	-/-; N		81	0
Sowerby’s beaked whale	<i>Mesoplodon bidens</i>	Western North Atlantic	-/-; N		81	0
Family Delphinidae						
Long-finned pilot whale	<i>Globicephala melas</i>	Western North Atlantic	-/-; N	39,215 (0.30; 30,627; See SAR)	306	21
Short finned pilot whale	<i>Globicephala macrorhynchus</i>	Western North Atlantic	-/-;Y	28,924 (0.24; 23,637; 2016)	236	160
Bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic Offshore	-/-; N	62,851 (0.23; 51,914, 2016)	519	28
		W.N.A. Southern	-/-;Y	6,639 (0.41, 4,759, 2016)	48	12.2-21.5

		Migratory Coastal				
Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic	-/-; N	172,947 (0.21; 145,216; 2016)	1,452	399
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Western North Atlantic	-/-; N	39,921 (0.27; 32,032; 2012)	320	0
Risso's dolphin	<i>Grampus griseus</i>	Western North Atlantic	-/-; N	35,493 (0.19; 30,289; 2016)	303	54.3
Rough-toothed dolphin	<i>Steno bredanensis</i>	Western North Atlantic	-/-; N	136 (1; 67; 2016)	0	0.7
Family Phocoenidae (porpoises)						
Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy	-/-; N	95,543 (0.31; 74,034; 2016)	851	217
<p>¹ ESA status: Endangered (E), Threatened (T) / MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality and serious injury (M/SI) exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.</p> <p>² NMFS marine mammal stock assessment reports online at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.</p> <p>³ These values, found in NMFS's SARs, represent annual levels of human-caused M/SI plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.</p> <p>⁴ The draft 2022 SARs have yet to be released; however, NMFS has updated its species webpage to recognize the population estimate for NARWs is now below 350 animals (https://www.fisheries.noaa.gov/species/north-atlantic-right-whale)</p>						

As indicated above, all 17 species (with 18 managed stocks) in Table 3 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. In addition to what is included in Sections 3 and 4 of the application, the SARs, and NMFS' website, further detail informing the baseline for select species (*i.e.*, information regarding current Unusual Mortality Events (UME) and important habitat

areas) was provided in the notice of proposed IHA (87 FR 7139; February 8, 2022) and is not repeated here. No new information is available since publication of that notice.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 dB threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 4.

Table 4. Marine Mammal Hearing Groups (NMFS, 2018)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, Cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i>)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite (<i>i.e.</i> , all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall <i>et al.</i> 2007) and PW pinniped (approximation).	

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from the deployed acoustic sources have the potential to result in behavioral harassment of marine mammals in the vicinity of the study area. The **Federal Register** notice for the proposed IHA (87 FR 7139; February 8, 2022) included a discussion of the effects of anthropogenic noise on marine mammals and their habitat, therefore that information is not repeated here; please refer to the **Federal Register** notice (87 FR 7139; February 8, 2022) for that information.

Estimated Take

This section provides the process by which the estimated takes were devised and the number of incidental takes NMFS authorized in the IHA, which informs both NMFS' consideration of "small numbers" and the negligible impact determinations.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines “harassment” as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes are by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to noise from certain HRG acoustic sources. Based primarily on the characteristics of the signals produced by the acoustic sources planned for use, Level A harassment is neither anticipated (even absent mitigation), nor authorized. Consideration of the anticipated effectiveness of the mitigation measures (*i.e.*, exclusion zones and shutdown measures), discussed in detail below in the **Mitigation** section, further strengthens the conclusion that Level A harassment is not a reasonably anticipated outcome of the survey activity. As described previously, no serious injury or mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more

detail and present the take estimates.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 160 dB re 1 μ Pa (rms) for the impulsive sources (*i.e.*, sparkers and boomers) evaluated here for Kitty Hawk Wind's proposed activity.

Level A Harassment – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). For more information, see NMFS' 2018 Technical Guidance, which may be accessed at

www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.

Kitty Hawk Wind's proposed activity includes the use of impulsive sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine mammals exposed to noise through use of the sources proposed for use here, and the potential for Level A harassment is not evaluated further in this document. Please see Kitty Hawk Wind's application for details of a quantitative exposure analysis exercise, *i.e.*, calculated Level A harassment isopleths and estimated Level A harassment exposures. Kitty Hawk Wind did not request authorization of take by Level A harassment, and no take by Level A harassment is authorized.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

Sources that have the potential to result in marine mammal harassment include sparkers and boomers. These are impulsive sources. The basis for the HRG survey take estimate is the number of marine mammals that would be exposed to sound levels in excess of Level B harassment criteria for impulsive and/or intermittent noise (160 dBrms). Distances to thresholds were calculated assuming a propagation loss rate of $15\log R$, also known as practical spreading. The resulting distances to NMFS Level B harassment isopleth (160 dBrms) are presented in Table 5.

Kitty Hawk then considered track line coverage and isopleth distance to estimate the maximum ensonified area over a 24-hr period, also referred to as the zone of influence (ZOI). The estimated distance of the daily vessel track line was determined using the estimated average speed of the vessel (4 kn (7.4 km/hr)) and the 24-hour operational period. Within each survey segment, the ZOI was calculated using the

respective maximum distance to the Level B harassment threshold and estimated daily vessel track of 177.792 km. During the use of the Applied Acoustics Dura-Spark 1000J MCS, estimates of take have been based on a maximum Level B harassment distance of 445 m from the sound source resulting in an ensonified area (*i.e.*, ZOI) around the survey equipment of 158.857 km² per day over a projected survey period of 45 days (Table 5). During the use of Applied Acoustics S-Boom (boomer), estimates of take have been based on a maximum Level B harassment distance of 13.49 m from the sound source resulting in an ensonified area (*i.e.*, ZOI) around the survey equipment of 4.765 km² per day over a projected survey period of 273 days (Table 5).

The ZOI is a representation of the maximum extent of the ensonified area around a sound source over a 24-hr period. The ZOI was calculated per the following formula:

$$\text{ZOI} = (\text{Distance/day} \times 2r) + \pi r^2$$

Table 5. Level B Harassment Threshold Distances and Ensonified Area

Dominant Survey Equipment	Number of Active Survey Days	Estimated Total Line Distance (km)	Estimated Distance per Day (km)	Distance to Threshold	ZOI per Day (km ²)
MCS	47	8,152	177.792	445	158.857
Boomer	226	42,059		13.4	4.765

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.*, 2016, 2017, 2018, 2020) represent the best available information regarding marine mammal densities in the survey area. The density data presented by Roberts *et al.* (2016, 2017, 2018, 2020) incorporates aerial and shipboard line-transect survey data from NMFS and other organizations and incorporates data from 8 physiographic and 16 dynamic oceanographic and biological covariates, and

controls for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016). In subsequent years, certain models have been updated based on additional data as well as certain methodological improvements. More information is available online at

<https://seamap.env.duke.edu/models/Duke/EC/>. Marine mammal density estimates in the survey area (animals/km²) were obtained using the most recent model results for all taxa (Roberts *et al.*, 2016, 2017, 2018, 2020). The updated models incorporate additional sighting data, including sightings from NOAA's Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys.

Monthly density grids (*e.g.* rasters) for each species were overlain with the Survey Area and values from all grid cells that overlapped the Survey Area were averaged to determine monthly mean density values for each species. Monthly mean density values within the Survey Area were averaged by season (Winter (December, January, February), Spring (March, April, May), Summer (June, July, August), Fall (September, October, November)) to provide seasonal density estimates. Within each survey segment (WDA and offshore export cable corridor), the highest seasonal density estimates during the duration of the survey were used to estimate take.

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

For most species, the amount of take authorized is equal to the calculated take amount resulting from the following equation: $D \times ZOI \times d$ where d equals the number of days each source is dominant (*i.e.*, 47 days for the sparker and 226 days for the boomer). We note the densities provided in Table 5 represent the number of animals/100 km; therefore, the density is normalized to 1km in the equation. However, for some species,

this equation does not reflect those species that can travel in large groups- an important parameter to consider that is not captured by density values. The equation also does not capture the propensity of some delphinid species to be attracted to the vessel and bowride. Therefore, to account for these real-world situations, the authorized take is a product of group size. For large groups of spotted and common dolphins knowing their affinity for bow riding (and therefore coming very close to the vessel), Kitty Hawk Wind assumed one group could be taken each day of sparker and/or boomer operations (273). Based on marine mammal sighting data collected during previous survey efforts, as described in Avangrid's previous monitoring report, Kitty Hawk Wind assumes an average group size for spotted dolphins is 16 in the survey area. For common dolphins, the overall average reported group size was 4 in all survey areas but the average group size during prior geotechnical surveys was 17 individuals. For Risso's dolphin and pilot whales, average group size for these species are 25 and 20, respectively (Reeves *et al.* 2002).

For bottlenose dolphin densities, Roberts *et al.* (2016a, 2016b, 2017, 2018, 2020) does not differentiate by individual stock. The WDA is located within depths exceeding 20 m. Therefore, given the southern coastal migratory stock propensity to be found shallower than the 20 m depth isobath north of Cape Hatteras (Reeves *et al.*, 2002; Waring *et al.*, 2016), take of the southern coastal migratory stock would be unlikely. Therefore, all work in the WDA was allocated to the offshore stock.

Table 6 provides the total amount of take authorized in the IHA. For details of take per survey segment, please see Table 8 in Kitty Hawk's application.

Table 6. Marine Mammal Density and Take Estimates

Species	Stock	Calculated Take	Authorized Take	Percent of Population
N. Atlantic right whale	Western North Atlantic	2	2	<1
Humpback whale	Gulf of Maine	15	15	<1

Fin whale	Western North Atlantic	18	18	<1
Sei whale	Western North Atlantic	1	1	
Minke whale	Canadian East Coast	22	22	<1
Pilot whales	Western North Atlantic	32	32	<1
Cuvier's Beaked Whale	Western North Atlantic	5	5	<1
Mesoplodon spp. ¹	Western North Atlantic	3	3	<1
Bottlenose dolphin	Western North Atlantic, offshore,	823	823	<1
	Western North Atlantic southern migratory coastal	226	226	6.0
Common dolphin a/	Western North Atlantic	365	9,282	5.3
Atlantic spotted dolphin a/	Western North Atlantic	418	8736	<1
Risso's dolphin a/	Western North Atlantic	8	25	<1
Rough-toothed dolphin a/	Western North Atlantic	1	20	14.7
Harbor porpoise	Gulf of Maine/Bay of Fundy	39	39	<1
¹ <i>Mesoplodon spp</i> represent Blainsville beaked whales (<i>Mesoplodon densirostris</i>), True's beaked whales (<i>Mesoplodon europaeus</i>), and/or Sowerby's beaked whales (<i>Mesoplodon bidens</i>). ² Multiplier applied to increase calculated take to account for two large group size, an average pod size of 16 individuals encountered in Survey Area (Milne 2019, 2021) has been included for spotted dolphin and 17 individuals have also been included for common dolphin (Milne 2019, 2021). Pod size adjustments of 25 and 20 individuals (average pod size from Reeves et al. [2002]) have been included for Risso's and rough-toothed dolphins, respectively.				

Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other

means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost and impact on operations.

Mitigation for Marine Mammals and their Habitat

NMFS requires that the following mitigation measures be implemented during Kitty Hawk Wind's planned marine site characterization surveys.

Pre-Clearance of the Shutdown Zones

Kitty Hawk Wind must implement a 30-minute monitoring period of the clearance zones prior to the initiation of ramp-up of HRG equipment. During this period, the clearance zone will be monitored by the PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective zone. If a marine mammal is observed within the clearance zone during the pre-clearance period, ramp-up may not begin until the animal(s) has been observed exiting its respective clearance zone or until an additional time period has elapsed with no

further sighting (*i.e.*, 15 minutes for small odontocetes and seals, and 30 minutes for all other species).

Ramp-Up

Where technically feasible (*e.g.*, equipment is not on a binary on/off switch), a ramp-up procedure will be used for HRG survey equipment capable of adjusting energy levels at the start or restart of HRG survey activities. A ramp-up will begin with the power of the smallest acoustic equipment at its lowest practical power output appropriate for the survey. When technically feasible the power will then be turned up and other acoustic sources added in a way such that the source level would increase gradually. Ramp-up activities not begin if a marine mammal(s) enters a clearance zone(s) prior to initiating ramp-up. Ramp-up will commence when the animal has been observed exiting the exclusion zone or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small dolphins and seals and 30 minutes for all other marine mammal species). The ramp-up procedure will be used at the beginning of HRG survey activities to provide additional protection to marine mammals near the survey area by allowing them to vacate the area prior to the commencement of survey equipment use.

Marine Mammal Shutdown Zones

An immediate shutdown of a sparker or boomer is required if a marine mammal is sighted entering or within its respective exclusion zone. The vessel operator must comply immediately with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective exclusion zone or 30 minutes has passed without subsequent detection of a large whale or 15 minutes for a smaller cetacean or seal. Table 6 provides the required shutdown zones.

Table 6. Clearance and Shutdown Zones During Sparker and Boomer Use

Species	Clearance Zone (m)	Shutdown Zone (m)
North Atlantic right whale	500	500
All other ESA-listed marine mammals	500	450
Non-ESA marine mammals ¹	100	100
	¹ Shutdown is not required for a delphinid from specified genera <i>Delphinus</i> , <i>Stenella</i> (<i>frontalis</i> only), and <i>Tursiops</i> .	

Shutdown Procedures

The vessel operator must comply immediately with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective shutdown zone or the relevant time period has lapsed without re-detection (15 minutes for small odontocetes and seals, and 30 minutes for all other species).

The shutdown requirement is waived for small delphinids of the following genera: *Delphinus*, *Stenella* (*frontalis* only), and *Tursiops*. Furthermore, if there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgement in making the decision to call for a shutdown. Additionally, shutdown is required if a delphinid detected in the exclusion zone and belongs to a genus other than those specified.

If the acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, it may be activated again only if the PSOs have maintained constant observation and the shutdown zone is clear of marine mammals. If the source is turned off for more than 30 minutes, it may only be restarted after PSOs have cleared the shutdown zones for 30 minutes.

If a species for which authorization has not been granted, or, a species for which authorization has been granted but the authorized number of takes have been met,

approaches or is observed within the Level B harassment zone (445 m), shutdown is required.

Vessel Strike Avoidance

Kitty Hawk Wind will ensure that vessel operators and crew maintain a vigilant watch for marine mammals and slow down or stop their vessels to avoid striking these species. All personnel responsible for navigation and marine mammal observation duties will receive site-specific training on marine mammals sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures would include the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish protected species from other phenomena and 2) broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal;

- All vessel operators will monitor the NARW Reporting Systems (*e.g.* the Early Warning System, Sighting Advisory System, and Mandatory Ship Reporting System) daily throughout the entire survey period for the presence of NARWs during activities conducted in support of plan submittal;

- All vessel operators will comply with the 10 knot (18.5 km/hr) or less speed restrictions when operating in any SMA from November 1 through April 30;
- All vessels, regardless of size, must observe a 10-knot speed restriction in a NARW DMA;
- All survey vessels will maintain a separation distance of 500 m or greater from any sighted NARW or other ESA-listed whale;
- If underway, vessels must steer a course away from any sighted NARW at 10 kn (18.5 km/hr) or less until the 500 m minimum separation distance has been established. If a NARW is sighted in a vessel's path, or within 100 m to an underway vessel, the underway vessel must reduce speed and shift the engine to neutral. Engines will not be engaged until the NARW has moved outside of the vessel's path and beyond 100 m. If stationary, the vessel must not engage engines until the NARW has moved beyond 100 m;
- All vessels will maintain a separation distance of 100 m or greater from any sighted non-delphinid cetacean. If sighted, the vessel underway must reduce speed and shift the engine to neutral, and must not engage the engines until the non-delphinid cetacean has moved outside of the vessel's path and beyond 100 m. If a survey vessel is stationary, the vessel will not engage engines until the non-delphinid cetacean has moved out of the vessel's path and beyond 100 m;
- All vessel operators will comply with 10 knot (18.5 km/hr) or less speed restrictions when mother/calf pairs, pods, or large assemblages of non-delphinid cetaceans are observed near an underway vessel;
- All vessels will maintain a separation distance of 50 m or greater from any sighted delphinid cetacean and pinniped. Any vessel underway will remain parallel to a sighted delphinid cetacean or pinniped's course whenever possible and avoid excessive speed or abrupt changes in direction. Any vessel underway reduces vessel speed to 10 kn

(18.5 km/hr) or less when pods (including mother/calf pairs) or large assemblages of delphinid cetaceans are observed. Vessels may not adjust course and speed until the delphinid cetaceans have moved beyond 50 m and/or the abeam of the underway vessel;

- All vessels underway will not divert or alter course in order to approach any marine mammal. Any vessel underway will avoid excessive speed or abrupt changes in direction to avoid injury to the sighted cetacean or pinniped;

- All vessels must reduce their speed to 10 kn or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel underway;

- All vessels must maintain a minimum separation distance of 500 m from right whales. If a whale is observed but cannot be confirmed as a species other than a right whale, the vessel operator must assume that it is a right whale and take appropriate action;

- All vessels must maintain a minimum separation distance of 100 m from or greater from any sighted non-delphinid cetacean;

- All vessels shall attempt to maintain a separation distance of 50 m or greater from any sighted delphinid cetacean and pinniped, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel); and

- When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities. In addition to the aforementioned measures, Kitty Hawk will abide by all marine mammal relevant conditions in the Greater Atlantic Regional Office's (GARFO) informal programmatic consultation, dated June 29, 2021 (revised September 2021), pursuant to section 7 of the ESA. These include the relevant best management practices of project design criteria (PDCs) 4, 5, and 7.

Based on our evaluation of the measures contained within the IHA, NMFS has determined that the mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected

to be present in the planned survey area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Monitoring Measures

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. Kitty Hawk Wind would employ independent, dedicated, trained PSOs, meaning that the PSOs must 1) be employed by a third-party observer provider, 2) have

no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and 3) have successfully completed an approved PSO training course appropriate for their designated task.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including exclusion zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established exclusion zones during survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.*, any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset). Two PSOs will be on watch during nighttime operations. The PSO(s) would ensure 360° visual coverage around the vessel from the most appropriate observation posts and would conduct visual observations using binoculars and/or night vision goggles and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 2 hours between watches and may conduct a maximum of 12 hours of observation per 24-hour period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals would be communicated to PSOs on all nearby survey vessels.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to exclusion zones. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared technology would be used. Position data would be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.*, daylight hours; Beaufort sea state 3 or less), to the maximum extent practicable, PSOs would also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey would be relayed to the PSO team.

Data on all PSO observations would be recorded based on standard PSO collection requirements. This would include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal behavior that occurs (*e.g.*, noted behavioral disturbances).

Reporting Measures

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a final technical report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. Any recommendations made

by NMFS must be addressed in the final report prior to acceptance by NMFS. All draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Daly@noaa.gov*. The report must contain at minimum, the following:

- PSO names and affiliations;
- Dates of departures and returns to port with port name;
- Dates and times (Greenwich Mean Time) of survey effort and times

corresponding with PSO effort;

- Vessel location (latitude/longitude) when survey effort begins and ends;

vessel location at beginning and end of visual PSO duty shifts;

- Vessel heading and speed at beginning and end of visual PSO duty shifts

and upon any line change;

- Environmental conditions while on visual survey (at beginning and end of

PSO shift and whenever conditions change significantly), including wind speed and

direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;

- Factors that may be contributing to impaired observations during each

PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions);

- Survey activity information, such as type of survey equipment in

operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-clearance survey, ramp-up, shutdown, end of operations, etc.)

If a marine mammal is sighted, the following information should be recorded:

- Watch status (sighting made by PSO on/off effort, opportunistic, crew,

alternate vessel/platform)

- PSO who sighted the animal;

- Time of sighting;
- Vessel location at time of sighting;
- Water depth;
- Direction of vessel's travel (compass direction);
- Direction of animal's travel relative to the vessel;
- Pace of the animal;
- Estimated distance to the animal and its heading relative to vessel at initial sighting;
- Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;
- Estimated number of animals (high/low/best);
- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- Animal's closest point of approach and/or closest distance from the center point of the acoustic source;
- Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, data acquisition, other);

- Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

If a NARW is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Kitty Hawk Wind must immediately report sighting information to the NMFS NARW Sighting Advisory System: (866) 755-6622. NARW sightings in any location must also be reported to the U.S. Coast Guard via channel 16.

In the event that Kitty Hawk Wind personnel discover an injured or dead marine mammal, Kitty Hawk Wind would report the incident to the NMFS Office of Protected Resources (OPR) and the NMFS Southeast Marine Mammal Stranding Network (1-877-942-5343) if the sighting is in North Carolina or the Northeast Stranding Network (1-866-755-6622) if the sighting is in Virginia as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in the activities covered by the IHA, Kitty Hawk Wind would report the incident to the NMFS OPR and the NMFS Southeast Marine Mammal Stranding Network (1-877-942-5343) if the sighting is in North Carolina or the Northeast Stranding

Network (1-866-755-6622) if the sighting is in Virginia as soon as feasible but within 24 hours. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Species identification (if known) or description of the animal(s) involved;
- Vessel's speed during and leading up to the incident;
- Vessel's course/heading and what operations were being conducted (if applicable);
- Status of all sound sources in use;
- Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
- Estimated size and length of animal that was struck;
- Description of the behavior of the marine mammal immediately preceding and following the strike;
- If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
- Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- To the extent practicable, photographs or video footage of the animal(s).

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of

the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any impacts or responses (*e.g.*, intensity, duration), the context of any impacts or responses (*e.g.*, critical reproductive time or location, foraging impacts affecting energetics), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’ implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality and serious injury, or ambient noise levels).

To avoid repetition, the majority of our analysis applies to the species listed in Table 6, given that many of the anticipated effects of the survey to be similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of the authorized take on the population due to differences in population status, or impacts on habitat, they are included in a separate sub-section. For all species, NMFS does not anticipate that mortality, serious injury, or injury would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is authorized.

As discussed in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section above, non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential takes would be in the form of short-term Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are

considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.*, 2007). Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. As described above, Level A harassment is not expected to occur given the nature of the operations, the estimated size of the Level A harassment zones, and the required shutdown zones for certain activities.

In addition to being temporary, the maximum expected harassment zone around a survey vessel from sparker use is 445 m and 13 m from boomer use. The ensonified area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as the impacts of the surveys are limited to very small areas around each vessel, prey species are mobile and are broadly distributed throughout the survey area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the survey area and there are no feeding areas known to be biologically important to marine mammals within the survey area. There is no designated critical habitat for any ESA-listed marine mammals in the survey area.

North Atlantic Right Whales

The status of the NARW population is of heightened concern and, therefore, merits additional analysis. As discussed in the notice of proposed IHA (87 FR 7139; February 8, 2022), elevated NARW mortalities began in June 2017 and there is an active UME. Overall, preliminary findings support human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of right whales. As noted previously, the survey area overlaps a migratory corridor BIA for NARWs. Due to the fact that the survey activities are temporary and the spatial extent of sound produced by the survey will be very small relative to the spatial extent of the available migratory habitat in the BIA, right whale migration is not expected to be impacted by the survey. Given the relatively small size of the ensonified area, it is unlikely that prey availability would be adversely affected by Kitty Hawk Wind's proposed survey operations. Required vessel strike avoidance measures would also decrease risk of ship strike during migration; no ship strike is expected to occur during Kitty Hawk Wind's proposed activities. Additionally, only very limited take by Level B harassment of NARWs has been authorized by NMFS and we anticipate a very low level of harassment, should it occur, because Kitty Hawk Wind would be required to maintain a shutdown zone of 500 m if a NARW is observed. The authorized take accounts for any missed animals wherein the survey equipment is not shutdown immediately. Because shutdown would occur immediately upon detection (if the whale is within 500 m), it is likely the exposure time would be very limited and received levels would not be much above harassment thresholds. Further, the 500 m shutdown zone for right whales is conservative, considering the Level B harassment isopleth for the most impactful acoustic source (*i.e.*, sparker- which may not be used on all survey days) is estimated to be 445 m, and thereby minimizes the potential for behavioral harassment of this species. As noted previously, Level A harassment is not expected due to the characteristics of the signals produced by the acoustic sources planned for use; this finding is further enforced by the proposed

mitigation measures. NMFS does not anticipate NARW takes that would result from Kitty Hawk Wind's activities would impact annual rates of recruitment or survival. Thus, any takes that occur will not result in population level impacts.

Other Marine Mammal Species with Active UMEs

As discussed above, there are several active UMEs occurring in the vicinity of Kitty Hawk Wind's survey area. Elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately half had evidence of human interaction (ship strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the West Indies breeding population, or DPS) remains stable at approximately 12,000 individuals.

Beginning in January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts, Maine, and New York. This event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales.

The mitigation measures are expected to reduce the number and/or severity of takes for all species listed in Table 6, including those with active UMEs, to the level of least practicable adverse impact. In particular they would provide animals the opportunity to move away from the sound source throughout the survey area before HRG survey equipment reaches full energy, thus preventing them from being exposed to sound levels that have the potential to cause injury (Level A harassment) or more severe Level B harassment. No Level A harassment is anticipated, even in the absence of mitigation measures, or authorized.

NMFS expects that takes will be in the form of short-term Level B behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or

decreased foraging (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals will only be exposed briefly to a small ensonified area that might result in take. Additionally, the mitigation measures would further reduce exposure to sound that could result in more severe behavioral harassment.

In summary and as described above, the following factors support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or authorized;
- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or authorized;
- Foraging success is not likely to be significantly impacted as effects on species that serve as prey species for marine mammals from the survey are expected to be minimal;
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the planned survey to avoid exposure to sounds from the activity;
- Take is anticipated to be by Level B behavioral harassment only consisting of brief startling reactions and/or temporary avoidance of the survey area;
- While the survey area is within areas noted as a migratory BIA for NARWs, the activities will occur in such a comparatively small area such that any avoidance of the survey area due to activities will not affect migration. In addition, the requirement to shut down at 500 m to minimize potential for Level B behavioral harassment would limit the effects of the action on migratory behavior of the species; and

- The mitigation measures, including visual monitoring and shutdowns, are expected to minimize potential impacts to marine mammals.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the total marine mammal take from the activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities. For this IHA, take of all species or stocks is below one third of the estimated stock abundance (in fact, take of individuals is less than 7 percent of the abundance for all affected stocks).

Based on the analysis contained herein of the proposed activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals would be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act 1973 (ESA; 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

NMFS is authorizing take, by Level B harassment only, of NARWs, fin whales, and sei whales which are listed under the ESA. On June 29, 2021 (revised September 2021), GARFO completed an informal programmatic consultation on the effects of certain site assessment and site characterization activities to be carried out to support the siting of offshore wind energy development projects off the U.S. Atlantic coast. Part of the activities considered in the consultation are geophysical surveys such as those proposed by Kitty Hawk Wind and for which we are proposing to authorize take. GARFO concluded site assessment surveys are not likely to adversely affect endangered species or adversely modify or destroy critical habitat. NMFS has determined issuance of the IHA is covered under the programmatic consultation; therefore, ESA consultation has been satisfied.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the

human environment. This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the final IHA qualifies to be categorically excluded from further NEPA review.

Authorization

As a result of these determinations, NMFS has issued an IHA to Kitty Hawk Wind for conducting marine site characterization surveys off the coast of North Carolina and Virginia, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. The final IHA and supporting documents can be found at <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>.

Dated: April 25, 2022.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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